

**REMARKS****I. Status of the Claims:**

As a matter of clarification, claims 1-9 and 11-13 are believed to be currently pending in the application. A Preliminary Amendment was filed along with the application on December 22, 2004, and is reflected in the USPTO PAIR site. Entry and consideration of the Preliminary Amendment are respectfully requested. The Preliminary Amendment included among other things the cancellation of claim 10 and the elimination of multiple dependencies.

By this current Amendment, claims 1, 8, 9, 12 and 13 have been amended, and new claim 14 has been added. Upon entry of this Amendment, claims 1-9 and 11-14 would be pending. No new matter is introduced by this Amendment and thus entry and consideration of this Amendment are respectfully requested.

**II. Objection of the Claims:**

Claim 10 is objected to under 37 C.F.R. § 1.75(c) as being in improper form.

As noted above, a Preliminary Amendment was filed on December 22, 2004 in this application. The Preliminary Amendment canceled claim 10, thereby rendering this rejection moot. Reconsideration and withdrawal of this objection are respectfully requested.

**III. Claim Rejections under 35 U.S.C. §§ 102 and 103:**

Claims 1, 9 and 11-12 are rejected under 35 U.S.C. § 102(b) as being anticipated by Honea (US 2002/0118718). Claims 2 and 3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Honea in view of Alcock (US 5,315,612). Claims 4-8 and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Honea in view of Zhang (US 2002/0105997).

Independent claims 1, 12 and 13, as amended, are directed to an arrangement involving “side pumping” or “pumping via a side face” of a slab of material with pump radiation of a frequency which is absorbed by the material to provide a gain region adjacent the side face.

On the contrary, Honea discloses a material that is end-pumped, not side-pumped as required by the independent claims 1, 12 and 13. The Applicants respectfully disagree with the Examiner’s assertions that Honea teaches in Fig. 3 a side-pumped system. As stated in Honea (paragraph 13), “Figure 3 illustrates an embodiment where the slab is pumped at both ends”. This is indeed just a two-ended extension of Figure 1 (paragraph 11) which is “a schematic illustration of a diode-array end pumped zig-zag slab laser where the pump light is delivered to one end of the laser slab through a dichroic coating”.

For the Examiner’s reference, as described on page 1 of the present application, end pumped and side pumped configurations are entirely distinct and each has its own advantages and disadvantages. This distinction would be understood by one of ordinary skill in the art.

In an end-pumped zig-zag slab laser, such as the one shown as Honea, the whole slab volume is pumped and acts as a single large gain volume. That is in contrast to the side pumping arrangement of the inventions, as claimed, in which the pump radiation is of a frequency which is absorbed by the slab of material, so as to provide a gain region which is adjacent to the pumped side face (see e.g., the last paragraph of page 2 of the present application).

Further, claims 1, 12 and 13 also require that the device defines a path through the gain region for the optical radiation to be amplified, this path comprising at least two spatially

different grazing incidence reflections in the gain region. This claimed aspect is neither shown nor contemplated in Honea.

The remaining cited references as relied upon by the Examiner do not remedy the above-noted deficiencies in the Honea teachings.

In view of the foregoing, claims 1, 12 and 13 and their dependent claims are distinguishable over the cited references, individually or in combination.

The dependent claims are also believed to be further distinguishable over the cited references. For example, claims 2-8 have been rejected as being unpatenable over Honea in light of Alcock or Zhang. However, neither of these documents, whether taken alone or in combination, disclose nor suggest to one of ordinary skill in the art that the optical path may include at least two, spatially different grazing incidence reflections in a gain region adjacent to the side face through which the pump radiation is being supplied.

Contrary to the Examiner's contention, Zhang does not teach side-pumping of multiple spatially different gain regions. There appears to be some misunderstanding as to the teaching of Zhang, Figure 5B (Elements #17). Elements #17 are not gain materials, but rather are "optical ducts" (page 5, Table of Reference Numerals in Diagrams). While two separate linear array diode bars (#11) are shown in Figure 5B, these two input pumping modules do not actually form separate gain regions but are guided by elements #11 primarily to provide two sided pumping of the whole volume of a thin solid-state laser material (#2) -- not separate "gain areas/regions" as described in claims 4-6.

For at least these additional reasons, the dependent claims are further distinguishable over the cited references.

**CONCLUSION**

Based on the foregoing amendments and remarks, the Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application.

**AUTHORIZATION**

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment and Request for Reconsideration to Deposit Account No. 13-4500, Order No. 4586-4005.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. 13-4500, Order No. 4586-4005.

Respectfully submitted,  
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